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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Sub-Committee of Experts on the Transport of Dangerous Goods

(Thirteenth session, Geneva, 7-17 July 1997, agenda item 5 (b))

GLOBAL HARMONISATION OF SYSTEMS OF CLASSIFICATION AND LABELLING OF CHEMICALS

Joint ILO/UN Working Group on harmonized classification criteria for flammability and reactivity

Explosive properties

Presented by the Chairman of the working group

Introduction

Within the previous three meetings of the Joint Working Group, open and wide discussions on expert level took place and a lot of information was exchanged. Based on the documents submitted and the contributions of the delegations several problems and unsolved questions were identified. Discussions could not be finished in the past biennium and it seemed even to be difficult to agree by consensus on some basic principles for the proposals for suitable criteria and cut-off values.

In the discussions it was a clear that the test methods and criteria of the UN Manual of tests and criteria should form the basis for the global harmonized approach in this area. However there were misunderstandings and some delegations more or less disputed on possible downstream consequences of a future implementation of a - not even drafted - global approach for this group of criteria.

Furthermore it was not clear whether the approach should only focus on class 1 of the UN Recommendations or whether some explosive properties of chemicals of other „transport"-classes have to be taken into account.

Especially in this area the purposes and aims of the harmonization process as shown in ST/SG/AC.10/C.3/1997/26 should be borne in mind. The global harmonized approach is not linked to the transport of dangerous goods only, but should be suitable for further protection purposes such as handling, use, storage. So not only transport safety but also worker protection, handling safety, consumer protection etc. have to be taken into account.

In the different areas several classification systems have been established and especially differing downstream regulations have developed in the past. Some of them are familiar e.g. to the UN Recommendations system, some are different.

As on the one hand the aim of agenda 21, chapter 19, area B, is clearly the harmonization of these different classification systems, the aim on the other hand can't be the complete harmonization of the implemented systems for downstream consequences being derived from the classification. So the Joint Working Group is invited to agree that:

- the UN classification system - especially class 1 - is one suitable way of implementation for criteria for explosive properties,

- the UN classification system - especially class 1 - should remain the way of implementation for criteria for explosive properties for the transport of dangerous goods,

- the UN classification system - especially class 1 - cannot be required to be the only way of implementation for criteria for explosive properties in all regulatory systems,

- other ways of implementation in other regulatory systems have to be recognized and respected the ongoing technical work on proposals for harmonized criteria,

- that therefore the proposals for the criteria for explosive properties should be based on the UN recommendations but should be abstracted in such a way that implementation in all regulatory systems concerned is facilitated,

- that the work of the Joint Working Group therefore should concentrate on hazards, hazard levels, internationally accepted and applied test methods, criteria and cut-off values for explosive properties.

Definition problems

Scope of proposals

Based on these principles it is suggested to first establish suitable definitions for the hazards and criteria involved. Related to this might be the question, how far explosive properties of some groups of substances, mixtures and solutions (such as preparations and wastes) and if and how far articles should be taken into account.

In previous discussions of the Joint Working Group it was stated, that explosive properties do not only exist „within class 1 of the transport system", and that explosive properties exist outside of that scope and purpose. It was said that those explosive properties covered by class 1 for transport are mainly related to substances, mixtures, solutions and articles designed, developed, manufactured and/or especially intended for explosive or pyrotechnic purposes.

But outside of that scope and purpose explosive substances, mixtures and solutions not designed, developped, manufactured and/or intended for explosive purposes might nevertheless show explosive properties according to the criteria.

So the Joint Working Group is invited to agree for its work,

- that in principle all explosive properties should be taken into account for the proposals for the harmonized criteria,
- that a clear distinction might be suitable between:
  - substances designed, manufactured, developped and/or especially intended for explosive or pyrotechnic effects and
  - other substances - not designed, manufactured, developed and/or especially intended for such purposes - but presenting explosive properties (additionally to other hazards they may present),
- that the first group to consider should include the substances, mixtures and solutions designed, developed, manufactured and/or intended for explosive or pyrotechnic effects,

and to discuss,

- whether - and how far - articles containing such substances, mixtures and solutions should be included in the harmonized system,
- whether - and how far - desensitized/phlegmatized substances, mixtures and solutions should be included as well,

- whether substances, mixtures, solutions and articles, which are too dangerous for transport, but which are handled, stored, used and transported in enclosed areas, should be included,

- whether - and how far - articles containing different dangerous goods of different hazards like technical equipment and appliances should be taken into account,

- whether compatibility aspects of substances and articles concerned should be included in the global harmonized approach.

If the Joint Working Group agrees to this way forward it could start to discuss as one suitable distinction and presentation the following thought starter:

Substances, mixtures, solutions and articles with explosive properties (including related groups)

Substances, mixtures, solutions (and articles ?) designed, developped, manufactured and/or intended for explosive or pyrotechnic effects - explosive substances (and articles?)		**Substances, mixtures and solutions not designed, developped, manufactured and/or intended for such purposes, but presenting explosive properties (substances with explosive properties?)**	
Definition An explosive substance is a solid or liquid substance or a mixture (or solution ?) of substances which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to surroundings: Pyrotechnic substances are included even when they do not evolve gases. A pyrotechnic substance is a substance or a mixture (or solution) of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reaction. (An explosive article is an article containing one or more explosive substances. ?) Note: A substance which is not itself an explosive substance, but which can form an explosive atmosphere of gas, vapour or dust is not included. Tests and criteria: test series (2, 3 and 4?)		**Definition** [A substance with explosive properties is a substance, mixture or solution, which is not designed, developped, manufactured and/or intended to be an explosive substance, but which can produce by chemical reaction explosive effects as to cause damage to surroundings] (Information: Some organic peroxides, some self-reactive substances and some substances related to self-reactive substances may be covered - additionally to their basic hazards - by this part.) Note: A substance which is not itself an explosive substance and is not designed, developped, manufactured and/or intended to be an explosive substance, but which can form an explosive atmosphere of gas, vapour or dust is not included. Tests and criteria: (test series 2, 3 and 4?)	
Hazards and criteria		**Hazards and criteria**	
Mass explosion hazard Definition: A mass explosion is one which affects almost the entire load (stored quantity ?) virtually instantaneously	Tests and criteria (test series 6 ?)	Mass explosion hazard Definition: A mass explosion is one which affects almost the entire load (stored quantity ?) virtually instantaneously	Tests and criteria (test series 6 ?)

Projection hazard, but not mass explosion hazard	Tests and criteria (test series 6 ?)		(not relevant?)	
Fire hazard and either a minor blasting hazard or a minor projection hazard or both, but no mass explosion hazard Definition This comprises substances (and articles) which -give rise to considerable radiant heat; or -burn one after another, producing minor blast or projection effects or both.	Tests and criteria (test series 6 ?)		Fire hazard and either a minor blasting hazard or a minor projection hazard or both, but no mass explosion hazard Definition This comprises substances which -give rise to considerable radiant heat; or -burn one after another, producing minor blast or projection effects or both.	Tests and criteria (test series 6 ?)
(No significant explosion hazard) Definition This comprises substances (and articles) which present only a small hazard in the event of ignition or initiation (during transport?, handling?, storage?). The effects are largely confined within the package and no projection of fragments of appreciable size or range is to be expected. An external fire should not cause virtually instantaneous explosion of almost the entire contents of the package.	(Test series 6 ?)		(No significant explosion hazard) Definition This comprises substances which present only a small hazard in the event of ignition or initiation (during transport?, handling?, storage?). The effects are largely confined within the package and no projection of fragments of appreciable size or range is to be expected. An external fire should not cause virtually instantaneous explosion of almost the entire contents of the package.	(Test series 6 ?)

Mass explosion hazard of very insensitive substances Definition This comprises substances which have a mass explosion hazard but are so insensitive that there is very little propability of initiation or of transition from burning to detonation under normal conditions of (transport?, storage?) The probability of transition from burning to detonation is greater when large quantities are (e.g.) carried in a ship (or stored?)	(Test series 5 ?)		(relevant?)	
(Extremely insensitive articles with no mass explosion hazard Definiton This comprises articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation. The risk is limited to the explosion of a single article.	(Test series 7 ?)		(relevant?)	